The complete periodontal examination

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Components of a complete periodontal examination

A thorough periodontal examination is a critically important data-collection activity that is necessary to arrive at a diagnosis and develop a treatment plan. In medically healthy patients with simple and rather straightforward periodontal conditions, the examination can usually be completed in one visit. For medically compromised patients with complex periodontal and dental problems, multiple visits may be needed to complete the data-gathering process.

The purpose of this chapter is to itemize and describe the basic components of a complete periodontal examination and briefly review their importance in the overall care of the patient.

History and chief complaint

Prior to conducting the hands-on examination, the information-gathering process begins with taking medical and dental histories from the patient. Many practitioners prefer to initiate this process by having the patient fill out a questionnaire. However, questionnaires are only a starting point, since a discussion with the patient about past and present medical/dental problems nearly always provides additional important information. A valuable aspect of this history-taking discussion is that it begins to develop the doctor–patient relationship. Indeed, the critically important patient-periodontal therapist partnership starts during these initial conversations. In addition, the discussion helps clarify important variables that may affect the periodontal health of the patient. For example, sometimes the only way to obtain a reasonably accurate smoking history is by one-on-one questioning. Procurement of an accurate list of medications that the patient may be taking is facilitated by talking with the patient.

A key component of the history-taking session is determination of the patient's chief complaint. Prior to the examination it is important to know why the patient is seeking a periodontal evaluation. With advance knowledge of the chief complaint, the examiner can, during the course of the examination, specifically look for possible explanations or causes of the patient's problems and concerns.

The initial periodontal examination

Prior to conducting a periodontal examination it is customary to routinely inspect the extraoral tissues of the head and neck. In addition, examination of all non-periodontal tissues in the mouth should be performed. In other words, a detailed periodontal evaluation is the last component of a thorough oral examination.

Performance of a periodontal examination is a multi-task activity. While keeping in mind all of the information gathered during the history-taking session, the examiner looks for any signs of periodontal disease or other abnormalities. It is, of course, necessary to have a good idea what healthy periodontal tissues look like (Fig. 1). In general, an overall inspection is made during which changes in color, shape, and texture of the gingival tissues are assessed. An appraisal of potential etiologic and predisposing factors is continuously being made during the examination process. Detailed measurements of probing depths and clinical attachment loss are taken and recorded. Finally, the teeth are inspected for occlusal relationships and restorative needs.

Recognition of gingival inflammation

One of the very first things to note during a periodontal examination is the presence or absence of

Fig. 1. Clinical appearance of healthy gingival tissues with no abnormalities in color, form, contour, or texture. (a) 14-year-old Caucasian female. (b) 36-year-old Caucasian female. **(c) 40-year-old African-American female with normal gingival pigmentation. (d) 62-year-old Caucasian female.**

disease. This often can be determined in seconds by looking for signs of gingival inflammation. The four most common signs of gingival inflammation that are routinely observed during a periodontal examination are redness, swelling, bleeding on probing, and purulent exudate (pus).

Gingival redness and swelling usually are seen together and occur first at the gingival margin. Without treatment the inflammation can eventually involve the entire interproximal area (Fig. 2a) and in some cases extend into portions of the attached gingiva (Fig. 3). Sometimes the redness associated with gingival inflammation can be quite subtle. If one is uncertain about the presence of inflammation-associated gingival redness, it is useful to compare the color of the site in question with that of a confirmed

healthy site (e.g. such a site is often the adjacent attached gingiva) (Fig. 3).

Recognition of gingival swelling or edema requires that the clinician have a very clear mental picture of the shape and texture of healthy gingiva (Fig. 1). Healthy gingiva is firm and resilient, whereas edematous tissue is often enlarged and puffy (Figs 2, 4 and 5). If there is some uncertainty about the presence or absence of gingival edema, it is sometimes useful to gently press the side of a periodontal probe against the tissue for a few seconds and then remove it. At edematous sites the imprint of the periodontal probe can often be seen (Fig. 5), whereas at sites without marked edema no imprint will be observed. Recognition of the presence or absence of gingival edema helps the clinician determine if the tissues are
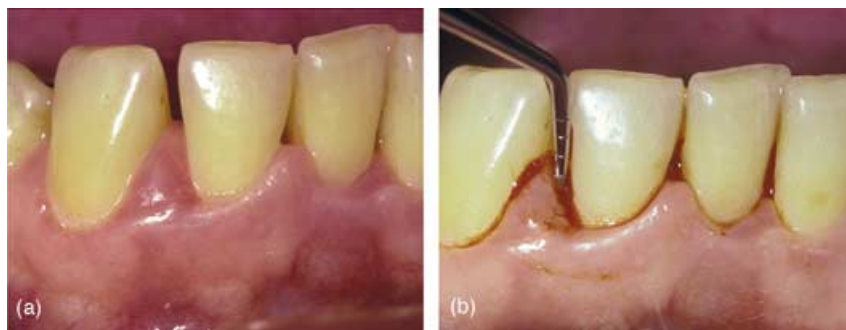

Fig. 2. Mandibular anterior region of a 55-year-old female with chronic periodontitis. (a) Note that the gingival papilla between the canine and lateral incisor is red and swollen. (b) Bleeding on gentle probing at the same site. Note: the 7 mm probing depth at the site. The clinical attachment loss is somewhat less than 7 mm since the gingival margin is coronal to the cementoenamel junction (not visible). The combination of gingival inflammation plus a considerable amount of clinical attachment loss indicates that the site has periodontitis (2).

Fig. 3. Gingival swelling and color change (redness) between the mandibular canine and first premolar affecting the attached gingiva in a 45-year-old female with chronic periodontitis. The color change can be rapidly determined by comparing the affected site with the appearance of the healthy attached gingiva in an adjacent area such as the second premolar and first molar.

Fig. 5. Pitting edema of an edematous interproximal area in a 65-year-old male with chronic periodontitis. The side of the periodontal probe was gently pressed against the edematous area for a few seconds and then removed. The resulting "pit" is indicative of the presence of gingival edema. The tissue is no longer firm and resilient.

healthy or diseased. In addition, it also serves another very important purpose – anticipating the response to treatment. Gingival edema and the accompanying redness often disappears shortly after scaling and root planing. Therefore, by noting that the tissues are edematous during the examination, the clinician can predict the likely response to therapy.

It should be remembered that not all areas of gingival redness and swelling are due to periodontal diseases. Endodontic infections sometimes drain through the orifice of a periodontal pocket thereby mimicking a periodontal abscess (Fig. 6). Elsewhere this volume discusses in detail the diagnosis of endodontic-periodontal lesions (10).

Bleeding on probing is a somewhat objective sign of gingival inflammation; it is either present or

absent (Fig. 2b). Inflamed gingival tissues bleed when gently probed because of minute ulcerations in the pocket epithelium and the fragility of the underlying vasculature. At the initial examination the percentage of sites that exhibit bleeding on probing prior to treatment is a clinically useful piece of information since it provides a full-mouth pretreatment assessment of the extent of gingival inflammation. For example, if 70% of the sites exhibit bleeding on probing prior to treatment, a decrease to 20% of the sites after initial scaling and root planing and oral hygiene instructions is encouraging to both the patient and periodontist by indicating that progress has been made. In other words, knowledge of this improvement reassures the patient and periodontist

Fig. 4. Swollen gingival papilla in a 17-year-old male. In this case the center of the swollen papilla has developed a "dimple" due to loss of tissue tone.

Fig. 6. Gingival swelling of endodontic origin on the interproximal gingiva between the molar and second bicuspid. The molar was undergoing endodontic treatment for a necrotic pulp.

Fig. 7. Mandibular anterior region of a 55-year-old female with chronic periodontitis (same patient as shown in Fig. 2). (a) Note the inflamed area between the lateral and central incisor. Color change including all of the attached gingiva overlying the central incisor can be seen. (b) Same area after digital pressure has been applied to the gingiva of the central incisor. Note the purulent exudate at the distal gingival margin of the central incisor.

that their joint efforts to control the periodontal infection are working.

Although purulent exudate (pus) can occasionally be found at sites with gingivitis, it is most often detected at sites with chronic periodontitis. Pus is a neutrophil-rich exudate that is found in about 3–5% of sites with untreated periodontitis (1). Without question, its presence signifies that the site is inflamed and infected. The best way to detect the presence of pus is to gently apply digital pressure to the overlying gingiva in a coronal direction (Fig. 7). Conventional wisdom suggests that the presence of pus is an unfavorable sign. However, available data suggest that suppuration is not a good stand-alone predictor of the progression of chronic periodontitis (1). This statement only applies to the relatively small amounts of pus produced at sites with chronic periodontitis. The importance of copious amounts of pus often seen at sites with periodontal abscesses is a different situation (Fig. 8). Highly purulent periodontal abscesses

are associated with rapid and extensive destruction of bone and surrounding tissues. The diagnosis of acute periodontal lesions is discussed in detail elsewhere in this volume (3).

Detection of departures from normal anatomy, shape, and form

During the examination, notations should be made of any deviations from normal periodontal anatomy such as alterations in contour, aberrant frenal attachments, and minimal amounts or lack of keratinized gingiva. These items are of particular importance if they interfere with the patient's ability to perform oral hygiene procedures.

Altered gingival contours can be the result of a wide range of factors. They become clinically important if they create esthetic problems, make plaque control difficult, or interfere with function. For example, gingival enlargement is a well-known side effect
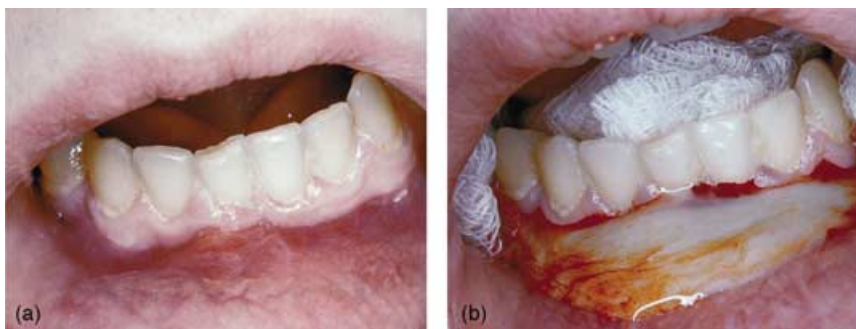

Fig. 8. Highly purulent periodontal abscess on a mandibular central incisor in a 38-year-old female. (a) The entire vestibule in the lower anterior region was markedly swollen from a large accumulation of pus. (b) A massive amount of pus was released immediately after an incision was made to drain the abscess. (Courtesy of Dr. Gilbert V. Oliver.)

Fig. 9. A 35-year-old female with gingival enlargement associated with the ingestion of phenytoin to help control cerebral seizures. The gingival enlargement created esthetic problems for the patient and was her chief complaint.

Fig. 10. Localized enlargement of the palatal gingiva in the molar region in a medically healthy 32-year-old female. The enlargement was bilateral and was considered to be an unusual anatomic variation. The enlarged gingiva was the focus of the patient's chief complaint.

Fig. 11. Bilateral large mandibular tori in a 45-year-old female that interfered with oral hygiene procedures.

of certain medications (e.g. phenytoin, nifedipine, cyclosporine) (Fig. 9). Sometimes the enlargement is due to unusual anatomic variations (Fig. 10). Occasionally, mandibular tori can be come so large that they interfere with chewing or impede access for plaque control procedures (Fig. 11). Little needs to be said about these alterations in contour because they are clinically obvious and are often associated with the patient's chief complaint. However, mention should be made of subtle changes in gingival contour that are sometimes overlooked, but have clinical importance. In some patients with long-standing chronic periodontitis, the gingiva becomes firm and enlarged in reaction to the chronic inflammation (Fig. 12–14). Sometimes such tissues are referred to as "fibrotic." In contrast to gingival enlargement due to tissue edema, fibrotic enlargements will not disappear after scaling and root planing. This knowledge is important since it helps the clinician anticipate what tissue changes will occur after non-surgical therapy. The best way to confirm that the tissue is fibrotic is to gently press on the gingiva with

Fig. 12. A 49-year-old male with chronic periodontitis. (a) The altered contours and enlargement of the interproximal gingival papillae were due to the longstanding inflammation. The papillae were firm and "fibrotic" and the contours did not appreciably change after nonsurgical therapy. (b)

Lingual view of the same teeth shown in A. The interproximal gingiva with increased redness was highly edematous, thereby increasing the likelihood of considerable shrinkage after nonsurgical therapy.

Fig. 13. Fibrotic gingiva in the maxillary anterior region in a 52-year-old male. The gingival contours will not change after nonsurgical therapy.

the side of the periodontal probe. Unlike the reaction of edematous tissue to this procedure, no imprint of the probe will be left behind.

During the examination, notations should be made about narrow bands, or the complete absence, of keratinized gingiva. This item is discussed in detail elsewhere in this volume (6). However, the main clinical importance of an adequate zone of keratinized gingiva is that it is often necessary for the patient to comfortably perform oral hygiene procedures. The gingiva overlying teeth with narrow zones of keratinized gingiva is often thin and is thereby

Fig. 14. Gingiva with altered contours in the same patient shown in Fig. 13 Some of the enlargement was due to edematous changes and some had already become fibrotic. In such cases, nonsurgical therapy will only result in partial resolution of the gingival enlargement.

Fig. 15. An unusual case of a 24-year-old female who lacked keratinized gingiva in most areas of her mouth. The atypically thin gingiva was at high risk for developing recession from both plaque-induced inflammation and damage during toothbrushing. Both causes of recession were etiologic factors in this patient. Cases similar to this have been reported by Moskow & Baden (8).

prone to toothbrush-induced damage followed by recession (Fig. 15).

Aberrant frenal attachments are anatomic features that should be noted if they contribute to a clinical problem. This item is discussed in detail elsewhere in this volume (6). However, the most common situation in which they become a problem is when they interfere with oral hygiene or other self-care procedures. For most patients it is uncomfortable to brush non-keratinized tissues such as frena and alveolar mucosa. Therefore, if the frenal attachments are located close to the gingival margin, patients tend to avoid cleaning these areas and plaque-induced periodontal disease develops (Fig. 16). In some instances a frenum is located near the gingival margin of a tooth in an area with little or no keratinized gingiva (Fig. 17). Such a combination should be considered to increase the risk for the future development of periodontal problems at the site and should most certainly be noted at the time of the initial examination. In other cases a very prominent frenum may be attached at the mucogingival junction where there is an adequate band of keratinized healthy gingiva coronal to the attachment (Fig. 18). Under these circumstances the risk of developing a periodontal problem is unlikely because the patient can adequately clean the site.

Assessment of etiologic and predisposing factors

During the course of a periodontal examination the clinician should begin to develop an idea of what

Fig. 16. Multiple frena attached to positions on the gingiva that make oral hygiene difficult and uncomfortable. Note the heavy calculus deposits, an indication that the patient does not (or cannot) effectively clean the areas.

etiologic and predisposing factors are present. As the examination is being performed the clinician should develop an impression of what modifiable factors might be responsible for, or increase the risk of, periodontal infections. Where are the heaviest deposits of plaque and calculus? Are there local contributing factors that might increase the risk for periodontal infections? Conceptually, one is looking for etiologic items or predisposing factors that can be modified by therapeutic interventions. Tooth-related factors such as close roots, palatal-gingival grooves, furcation anatomy, cervical enamel projections, overhangs on dental restorations, and other local contributing factors are all discussed elsewhere in this volume (6)

Fig. 17. Attachment of a frenum between two mandibular central incisors near the gingival margins of both teeth. Note the lack of keratinized gingiva in the area. Both teeth have an increased risk of developing plaque-induced periodontal problems if oral hygiene cannot comfortably be performed at the sites. The situation should be recorded at the initial periodontal examination.

Fig. 18. Attachment of a prominent frenum at the muco-gingival junction in an area where there is enough keratinized gingiva to permit good oral hygiene.

and will not be repeated here. However, when present they should be noticed and recorded. As the information is being collected it is important to keep in mind what is known about potential risk factors for chronic periodontitis such as cigarette smoking, poor compliance, aging, psychological stress, and genetic susceptibility. These and other risk factors are discussed in detail elsewhere in this volume (9).

Assessment of periodontal damage

Assessments of periodontal damage are a mandatory component of a complete periodontal examination. Measurements taken with calibrated periodontal probes are the main way in which damage to the periodontium is assessed. Such measurements include probing depth, clinical attachment loss, and gingival recession. Probing depth and clinical attachment loss measurements are routinely recorded at six sites around each tooth (i.e. mesiobuccal, buccal, distobuccal, mesiolingual, lingual, and distolingual). During the course of periodontal probing the instrument is stepped around the entire circumference of the tooth and the deepest reading nearest each of the six sites listed above is recorded. In other words, an attempt is made to probe every portion of the gingival crevice or pocket around each tooth. This routine of thoroughly probing all locations is usually followed since it is often impossible to tell from the superficial appearance of the gingiva if sites will have deepened probing depths and loss of attachment (Fig. 19). In addition to the above assessments, radiographs are a necessary adjunct to a thorough periodontal examination. A detailed discussion of imaging methods (including radiography) can be found elsewhere in this volume and will not be repeated here (7).

Fig. 19. Gingiva in a 38-year-old female that superficially looks healthy (a). Insertion of a periodontal probe on the mesiobuccal side of the first molar reveals a probing depth of 8 mm (b). The patient had received scaling and root planing by the referring dentist approximately 6 weeks prior to taking these photographs.

Probing depth is the distance from the gingival margin to the base of the probeable crevice. Probing depth measurements are important because they give a good approximation of the principal habitat of periodontal pathogens (i.e. periodontal pockets). Knowledge of the depth, extent, and location of pockets gives the clinician a good idea where therapy might be directed. Indeed, probing depth reduction is often one of the important goals of many forms of periodontal therapy. However, probing depth measurements do not necessarily give the best approximation of the amount of periodontal damage since the reference point from which the measurements are taken (i.e. the gingival margin) may fluctuate in apical or coronal directions. For example, at one examination the probing depth at a given site might be 4 mm, but at a later date gingival inflammation can cause gingival swelling that results in migration of the gingival margin 2 mm coronally. The probing depth at this later date would be 6 mm (i.e. 4 mm + 2 mm) even though no additional periodontal damage had occurred. Conversely, if at a later date 2 mm of additional attachment loss occurred and the gingival margin receded 2 mm apically, the probing depth would still be 4 mm. In other words, the gingival margin is not a fixed landmark from which valid assessments of additional damage can be made.

Clinical attachment loss is the distance from the cementoenamel junction (CEJ) to the base of the probeable crevice. If the CEJ landmark is missing because it has been destroyed by dental caries or has been removed by placement of a dental restoration, another fixed reference point can be used to measure attachment loss. Such landmarks might include the apical margin of a restoration or the incisal edge of a tooth. When attachment loss measurements are taken from a fixed landmark other than the CEJ they are called relative attachment loss measurements. Clinical attachment loss or relative attachment loss measurements are the best way to assess the presence or absence of additional periodontal damage.

Some clinicians elect not to take clinical attachment loss measurements at the initial examination but wait until active treatment has been completed. The main reasons for this are that many changes occur in clinical attachment loss as a result of therapy and the measurements are easier to obtain once supragingival and subgingival calculus has been removed. Nevertheless, prior to placing patients in the maintenance phase of therapy, clinical attachment loss readings should be taken since these measurements serve as a baseline from which future determinations of additional attachment loss are judged.

Gingival recession is the distance from the CEJ to the gingival margin (GM). Recession is often of major concern to patients since it is a readily visible manifestation of periodontal damage and can cause esthetic problems when in occurs around anterior teeth. Indeed, many patients have a chief complaint of ''receding gums.'' Therefore, at the initial examination it is important to record the amount and location of gingival recession.

Damage from periodontal disease often involves the furcation areas of multirooted teeth. The severity of furcation involvement is an important factor in developing a treatment plan for affected sites. Therefore, during a complete periodontal examination the location and severity of furcation involvements should be recorded. One common classification system for furcation involvement includes: Class I (beginning), Class II (cul-de-sac), and Class III (through-and-through). A detailed discussion of the classification, diagnosis, and importance of furcation involvements can be found elsewhere in this volume (6).

The final assessment of periodontal damage that should be recorded during a complete periodontal examination is abnormal tooth mobility. Although this symptom may have several causes other than periodontal infections (5), loss of alveolar bone from periodontitis is a major cause of abnormal tooth mobility. In addition, it is sometimes part of the patient's chief complaint (e.g. ''My teeth are loose.'').

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The diagnosis and overall importance of tooth mobility are discussed in elsewhere in this volume (4).

Inspection of the teeth

Although the primary focus of a periodontal examination is the periodontium, the teeth also need to be carefully inspected for dental caries, restorative problems (6), and occlusal discrepancies (4). Tooth-related problems have considerable importance in the overall periodontal treatment plan.

Recording the findings

There are many types and styles of periodontal charts to choose from. Selection of one charting system over another is entirely up to the preferences of the individual practitioner. Most acceptable charting systems are simple, easy to fill out and read, and contain all of the relevant information collected during the periodontal examination. An example of such a chart is shown in Fig. 20. The periodontal chart is a permanent record that can be used in assisting the practitioner to arrive at a diagnosis and prognosis, develop a treatment plan, and longitudinally evaluate the response to therapy.

To efficiently fill out a periodontal chart requires the help of a dental assistant who serves as a recorder of the examination findings. As the clinician calls out the measurements or assessments they are recorded in the chart. The chart shown in Fig. 20 has places for assessments of probing depth, the presence or absence of plaque, clinical attachment loss, the presence or absence of bleeding on probing, and the distance from the CEJ to the gingival margin (CEJ – GM). As mentioned above, in the section on ''Assessments of periodontal damage'' measurements or assessments at six sites around each tooth are usually recorded.

Some examiners prefer to record, as the very first step, the presence or absence of plaque on each tooth and surface. In the chart shown in Fig. 20, if supragingival plaque is present a ''dot'' (●) is placed in the box where the probing depth measurements will be inserted. The second step is to measure the probing depth, CEJ to GM distance, and the presence or absence of BOP. These three pieces of information

are collected virtually at the same time. In this step the examiner calls out a probing depth reading. Then a second number is called out that represents the CEJ to GM distance. Finally, if the site exhibits bleeding on probing, the examiner says ''bleeding,'' and the recorder places a ''dot'' (●) in the box where the clinical attachment loss measurement will eventually be inserted. As will be seen in a moment, the clinical attachment loss reading is a derived number obtained by adding the CEJ to GM distance to the probing depth measurement.

For beginners the CEJ to GM reading can be a source of confusion. There is usually no problem in understanding how to measure gingival recession (i.e. the CEJ to GM distance when the gingival margin is *apical* to the CEJ). The CEJ to GM measurement can be easily obtained since both of the reference points (i.e. CEJ and GM) are in full view. In addition, there is usually not a problem in understanding that the clinical attachment loss can be obtained by adding the probing depth to the amount of gingival recession. For example, if there is a 4 mm probing depth and 2 mm of gingival recession, the clinical attachment loss at the site is 6 mm (i.e. 4 mm + 2 mm). The problem occurs when the gingival margin is *coronal* to the CEJ (i.e. when there is no gingival recession). In this case, only one of the reference points (i.e. GM) is in full view of the examiner. To determine the CEJ to GM measurement the examiner must feel for the CEJ with the tip of the periodontal probe and estimate how far coronally the GM is from the CEJ. If the GM is at the CEJ, the number called out by the examiner would be ''zero.'' If the GM is 1 mm coronal to the CEJ, the number called out by the examiner would be ''minus one.'' If the GM is 2 mm coronal to the CEJ, the number called out by the examiner would be ''minus two.'' In other words, when the GM is coronal to the GM, the CEJ to GM measurement is recorded as a *negative* number. For example, if there is a 4 mm probing depth and the CEJ to GM distance is – 2 mm, the calculated clinical attachment loss at the site would be 2 mm (i.e. 4 mm – 2 mm).

The chart in Fig. 20 has been filled out using the examination findings from a patient with generalized severe chronic periodontitis. In addition to the probing depth, clinical attachment loss, and other assessments discussed above, commonly used symbols have been placed to reflect the extent of

Fig. 20. Example of a periodontal chart showing some of the clinical information collected during examination of a 36-year-old male with generalized chronic periodontitis. CAL = clinical attachment loss; BOP = bleeding on probing; PD = probing depth; Plaque = visible plaque (plaque index score = 2 using Silness & Löe system (11)); CEJ – GM = distance from cementoenamel junction to gingival margin.

6/30/03	Pre-treatment
	Re-evaluation
	Post-treatment

PERIODONTAL EXAMINATION RECORD

Name	Washington, George		Doctor	A. Lincoln		Date	June 30, 2003

											I		II				
Mobility																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CAL & BOP		846	714	346	349	869	775	358	428	947		959	346	559	532	
PD & Plaque		726	714	226	419	919	744	358	427	815		929	326	428	532	
CEJ-GM		120	000	120	-130	-150	031	000	001	132		030	020	131	000	
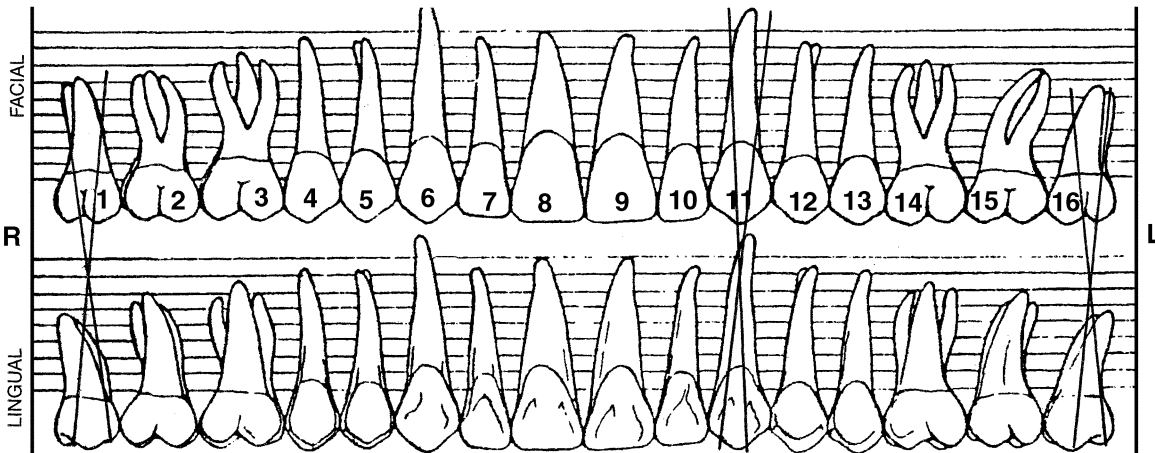
CEJ - GM		-111	000	000	000	-100	010	-1-1-1	-100	122		100	100	132	00-3	
PD & Plaque		438	825	977	439	969	774	328	326	766		379	568	837	735	
CAL & BOP		349	825	977	439	869	784	217	226	888		479	668	969	732	

CAL & BOP		966	449	533	328	986	966	754	444	567	698	733	763	899	757	
PD & Plaque		856	439	323	328	957	844	422	222	345	577	733	853	889	746	
CEJ - GM		110	010	210	000	03-1	122	332	222	222	121	000	-110	010	011	
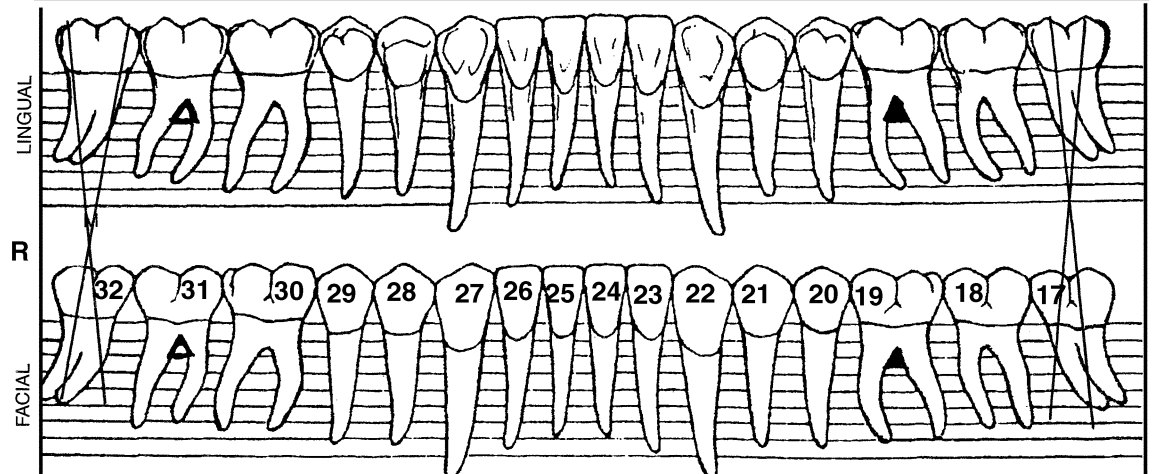
CEJ - GM		-100	102	-100	-100	22-1	-1-11	121	110	020	030	021	021	-10-1	-1-2-1	
PD & Plaque		765	826	316	329	727	727	753	315	568	829	723	823	989	934	
CAL & BOP		665	428	216	229	946	618	874	425	588	859	744	844	888	813	
	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
Mobility							I	I								

furcation involvement (Λ = incipient; Δ = cul-de-sac; ▲ = through-and-through) and mobility (I = slight, II = moderate, III = severe). Many other symbols to signify a variety of clinical findings are used by practitioners. There is no standard set of symbols that are universally accepted by the majority of clinicians. The important thing is that the symbols be consistently used and are understood by others who might be called upon to read the chart (e.g. a referring dentist or colleague).

Although the chart shown in Fig. 20 provides site-specific details of the collected assessments, it also provides the raw data from which some valuable full-mouth information can be calculated. In this patient, full-mouth summary data include: sites with probing depth $\geq$ 5 mm = 53.7%, clinical attachment loss $\geq$ 5 mm = 64.2%, bleeding on probing = 71.6%, and visible supragingival plaque = 66.7%. This information is useful in a number of ways and it has immediate applications in communicating with the patient. For example, it is very easy to point out to the patient that one of the reasons they have periodontal disease is that two-thirds of their tooth surfaces have visible plaque. Over 70% of the sites bleed, which is a sign of the infection and well over half of the sites have deep pockets with significant damage. After successful treatment, marked reductions in the percentages of sites with plaque and bleeding on probing will always occur. Simply showing the patient the improved percentages can be gratifying and encouraging to both patient and therapist. The important point being raised here is that data collected during a periodontal examination are not just for the therapist's eyes. If presented in an understandable way, patients can also benefit from seeing the clinical data.

In addition to the data traditionally recorded on the periodontal chart, the initial examination usually generates other important information that may be valuable in the subsequent development and execution of a treatment plan. Such items are usually entered, in detail, in the ''Progress Notes'' section of the patient's chart.

Follow-up (maintenance-phase) examinations

After completion of active periodontal therapy, prior to placing the patient on a maintenance program, the examination should be repeated. The information to be collected is the same as that obtained during the initial examination. A key purpose of this post-treatment evaluation examination is to determine if the administered therapy was successful in arresting the patient's disease. The examination also provides baseline or benchmark data to which all clinical data collected at subsequent examinations can be compared.

In a busy practice, as the number of patients on recall/maintenance programs increases, it is often difficult to rapidly assimilate, review, and compare all of the information collected from multiple examinations. Indeed, the sheer amount of clinical data becomes overwhelming after the patient has been on a maintenance program for several years. If one patient has 28 remaining teeth, each examination will generate 168 data points (i.e. six per tooth) for each assessment made or measurement taken. Since the periodontal chart shown in Fig. 20 has places for five clinical variables (i.e. clinical attachment loss, probing depth, bleeding on probing, plaque, CEJ – GM distance), each exam could generate 840 pieces of data (i.e. 5×168). If the patient is placed on a 3-month recall program and the examination is repeated at every visit, 3,360 data points will be generated in 1 year, 16,800 in 5 years and 33,600 in 10 years. Ways to overcome or deal with this potential burden include: utilizing computers during data entry and subsequent analysis, emphasizing or focusing on clinical attachment loss measurements, and reducing the number of examinations from 4 per year to 1 per year.

Computerized systems including software are needed to cope with the large amount of data collected during multiple examinations. Computers can automatically track changes in each of the assessments and bring them to the attention of the clinician. Since clinical attachment loss measurements are the best way to track the progression of periodontal disease, it makes sense to emphasize this assessment in the longitudinal evaluation of periodontal status. Finally, for most patients it is probably sufficient to conduct full examinations or data collection procedures once per year instead of quarterly. If this last option is chosen, the clinician should selectively and closely monitor high-risk or fragile sites at frequent intervals. The best option, of course, is to examine as frequently as is practical and enlist the aid of computer technology to assist in tracking any changes in periodontal status.

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